Contents

List of Figures

List of Tables

List of Abbreviations

SDLC - System Development Life Cycle

XP - Extreme Programming

DSDM - Dynamic System Development Method

RAD - Rapid Applications Development

4GLs - Fourth-generation languages

ASP - Active Server Pages

PRINCE2 - PRojects IN Controlled Environments

RFP – Request for proposal

1 Introduction

"The internet, intranets and extranets are now a part of our lives. They are here to stay; and thus the management of the delivery of the web projects has become an essential part of the project management armoury". [1]

This chapter gives the reader a quick overview of author's vision of the problem to be discussed, and the need to solve it. Delimitations in the project are presented in addition to the general content of the report.

1.1 Background

Since 1998, the author has worked in the web development field with big organizations specializing in creating and developing web sites for different sizes, scopes, and different domains of organizations.

He began as a web developer, and then worked as a System analyst and for the last 3 years as a Project Coordinator for Web Projects. During those years, the author hasn't had any references to follow in programming, analyzing or managing a web project. The first task was to collect information about how the process of work should proceed, and generally to organize the tasks based on this information. Unfortunately, not all sources were useful, as the information was often from expertise programmers or project managers, and lacked organization and was out of date.

The idea of this thesis is to create a unique method to manage web projects, which helps the audience improve their work as well as reduce cost and time, avoiding common old mistakes helping them to perform their work in a professional business work life cycle.

According to a the survey done by Ruby development center , New Bamboo ,more than 30 percent of web development teams deliver projects late or over-budget. These outcomes are consistent with studies of larger IT initiatives showing failure rates of 30%-70%. [2]

According to the same report, we find the following:

- 24% of Web projects were not delivered within budget, while the final costs of 5% of these projects were unknown.
- Gains of 21% did not achieve the needs of stakeholders.
- Almost 1 of 3 projects is not delivered on the agreed date.
- The study built on the 3 factors caused the failure of projects, with the result that 55% of these projects fail because of a change of requirements, while 31% fail because they did not arrive on time or beyond the budget's limits.

- Nearly half of web projects are developed within the company, while 28% are directed to specialist web development companies.

These results forced the author to think of creating a solution for this type of problems.

Other type of problems is that many companies don't really follow special or formal method in order to achieve their work, as this causes unexpected events such as cost overruns, scope change, which is possible to avoid it when using methodology. [3]

The author decided to create a handbook, and to develop a new methodology for website management. Hoping that these could prove to be helpful for target audience.

The author tries to get an idea how this handbook would help the companies and their developing websites in order to achieve a professional work process.

The author has analyzed those reasons and come up with some characteristics that should be in a book or a site or a web application called handbook. This Handbook should be simple, helpful, traceable, organized, risk free and realistic and built based on special methodology to solve the problem in hand.

1.2 Purpose / Objectives

"One of the greatest pains to human nature is the pain of a new idea"

Walter Bagehot

The main purpose of this thesis is to provide the web development companies with the methodology which is going to enable them to avoid the most expected problems may occur during the project's life process.

Not only the technical issues will be discussed, but also the management issues in managing the project will be discussed and covered.

Moreover, it gives the customer the opportunity to follow up the progress of work as well as his commitment to the development company.

The output of this thesis project is divided into two parts:

First one is developing a new methodology, which is called: "Z-Methodology", it is mixed of business and technology aspects and specialized in Web projects. In this way, the audiences will have one methodology to follow, which is better than two different methods that could drive them to many conflicts.

Z-methodology intends to make use of the main advantages from well-known methodology families (Project Management or Technology Development Management), but during designing method, the author will try to avoid carrying over the main disadvantages from these methodologies.

The Second part of the project is the handbook of Z-Methodology, which tells the audiences how to involve themselves into the work process and what should they do in certain phase during the whole project life according to Z-Methodology. This handbook will make the follow up of the work easier and more controlled.

The author defined Z-Methodology Handbook as "a set of structured, organized and traceable instructions, recommendations and forms helping the audiences to perform their tasks in a professional and simple way based on their skills and responsibility to achieve a full work life cycle and produce a product (web site) that satisfy the customer".

1.3 Target Audiences

The Z-Methodology Handbook is intended to be used by, Project Manager, System Analyst, System Administrator, Web Developer, Content Writer, Customer and other staff involved in the delivery of web projects. The sales or marketing persons could use this Handbook in order to help them in creating proposals and presentations for potential customers.

1.4 Delimitations

This thesis (methodology & Handbook) is not intended for the companies that have a core business in the development of web application for special services (i.e. shopping carts, Online Chat,..). Nevertheless, it doesn't mean that this handbook can not be useful for them.

The methodologies alongside this handbook are based on collected experience from project managers, in addition to literature reviews.

The short time given was not possible to apply the new methodology in a company to see its effectiveness, or to improve the design of the methodology.

1.5 Thesis outline

Chapter 2 is a review of the literature on handbook, web projects, and different project management & technology development methodologies. Chapter 3 provides an overview of the method used in the work. Chapter 4 presents data collection, analysis, and results of these data. Chapter 5 summarizes the result of the thesis (Z-Methodology and Handbook). Chapter 6 concludes the thesis and includes ideas for further work.

2 Literature review

"If you steal from one author, it's plagiarism; if you steal from many, it is research"

Wilson Miznar

2.1 Handbook

One of the most relevant definitions of the Handbook for this thesis is *"The name "handbook" may sometimes be applied to reference works that are not pocket-sized, but do provide ready reference, as in the case of several engineering handbooks. Handbooks are widely used in the sciences as quick references for various kinds of data."* [4]

Z-Methodology handbook gives the reader an overview of the phases of Z-Methodology, how it works, who is involved, and which forms to be used.

2.2 Project & Web project

A question which needs a clear answer might be posed before starting to explain several concepts relevant to the thesis topic; do you expect that the web development project is a software development project?

The definition of term "software" according to [14] is *"Computer programs & associated documentation. Software products may be developed for a particular customer or may be developed for a general market"*.

According to the following second part of the definition, we can categorize the "web project" as a software, but according to the following first part, this definition does not categorize "web project" as a "Computer program".

Many sources agree and differ on the definition of term "project". But the general definition is linked to a definite time for the start and end of implementation, to obtain a product or service. Add to these; determine the final cost and human resources and responsibilities. [5]

The discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives is the Project Management. It is often closely related and sometimes conflated to the program management. Project management was formally recognized in the 1950s as a distinct discipline arising from the management discipline. [6]

There are several functions that need to be managed in a project, including:

- Scope of work
- Organization of resources
- Cost and Time
- Quality and configuration
- Risk

These functions we will see later in section 2.4 will be used to compare different Project Management and Technology Development Methodologies, and based on these functions or factors and the survey conducted, the author developed Z-Methodology.

As with the definition of projects themselves, the literature throws up many definitions of e-projects, some of them are quite perspective and limited, and unnecessarily. Kulik and Samuelsen give a very simple definition of web-delivery projects: "An e-project is any project that involves creating or changing source code that is deployed on the Internet". [7]

The author observes here that the definition of Kulik and Samuelsen to term "project" has been completely differed. The reason of this is to determine the scope of the project. This definition is from the viewpoints of Kulik and Samuelsen. The author believes that the definition is unfair, because the writers ignored many of the aspects that should not neglected. Production code is a part of the final product and not all.

2.3 Web project phases

Ashley breaks down a project in four phases and eight work stages. Figure 1 shows how these phases and work stages relates to each other.

Phase 1			Phase 2			Phase 3	Phase 4
Preproduction			Production			Maintenance	Evaluation
Project clarification	Solution definition	Project specification	Content	Design and construction	Testing, launch, and handover	Maintenance	Review and evaluation

Figure 1 The four phases and eight work stages [8]

Other sources have different phases of managing a web project, but most of them have the same concept *****. These phases show the project managers the procedures to be followed to deliver the web site. But unfortunately, the deliverables of these methods are purely technical.

* See for instance "Making Things Happen: Mastering Project Management by O'Reilly"

2.4 Project Management & Technology Development Management Methodologies

"A project methodology is the entire structure used to support a project. It consists of templates and processes and is the generic standard for all projects used in a company. A development methodology is specific to the technology and is more technical in nature." [9]

As mentioned before in section 2.2, there are some functions or factors that should be taken into consideration when managing a project.

Charvat in his book [8] makes a very helpful comparison between different methodologies based on those factors plus the project size factor, see Table 1.

This comparison is still relevant, but many of those methodologies are not developed or even changed after first time in use, or some of them are not used any more.

On the other hand, this comparison suggests to the author metrics to use in development the Z-Methodology and how it should be developed; especially that it is mixed of these two types of methodologies, (Project Management Frameworks Methodologies & Technology Development Management Methodologies) and specialized for web projects.

Analysis of the Comparison:

Comparison of the Project Management Frameworks Methodologies shows us methods 1 and 2 as the best compared to the others based on the mentioned factors plus the project size factor, while methods 3, 4, and 5 are not suited to the control of the cost.

Comparison of the Technology Development Management Methodologies shows us method 6 as the perfect to the control of Quality, which is one of the main important factors in Technology field. On other hand, this method is not suited to the control of the other factors. Also as known for the Technical or Developer, Spiral method is one of the best methodologies used in developing IT projects, but this comparison Charvat which has been evaluated is not suited to the control of the Time and the Cost also the small project size.

Finally, method 11 and 14 in this comparison are the best to the control of Scope, Quality, Time and Cost. This means that the main problems could happen during executing the project will be avoided in case of using these methodologies.

This comparison is really useful for project managers to choose the methodology should be followed later when the project starts. But from the authors' point of view, this comparison will put the beginner project manager in a very confusing situation to select the right method for the project in hand, the main reason of

that is the multi option system, that's why many project managers are managing their projects based on their own experience or creating special method. Therefore, the needs for new methodology merge multi methodologies from business and technical perspective.

Description	Suited to control of:				P	Z	C
	S	Q	T	$			
Project Management Frameworks Methodologies							
1 Rational Unified Process	Y	Y	Y	Y	Y	M, L	1, 2, 3, 4
2 PRINCE2	Y	Y	Y	Y	Y	M, L	4
3 System Development Life Cycle (SDLC)	Y	Y	N	?	Y	S, M, L	3, 4, 6
4 Solutions-based Project Methodology	Y	Y	N	N	Y	S, M	3, 5
5 TenStep	Y	Y	Y	N	N	S, M	5
Technology Development Management Methodologies							
6 ** Extreme Programming (XP)	N	Y	N	N	N	S, M	5
7 Scrum	N	Y	N	N	N	S, M	5
8 Crystal	N	Y	N	N	N	S, M	5, 7
9 Dynamic Sys. Development (DSDM)	Y	Y	Y	?	Y	S, M	5
10 Rapid Applications Development (RAD)	Y	Y	Y	?	Y	M, L	5
11 Unicycle	Y	Y	Y	Y	Y	S, M, L	4
12 Code-and-fix Approach	N	N	N	N	N	S	7
13 V-methodology	Y	Y	Y	Y	Y	M, L	4
14 ** Waterfall	Y	Y	Y	Y	Y	M, L	4, 6
15 Open Source	N	N	N	N	N	S, M	5
16 Spiral	Y	Y	N	N	Y	M, L	4
17 Synchronize and Stabilize	Y	Y	N	N	Y	M, L	
18 Reverse Engineering Development	Y	Y	N	N	Y	M, L	4
19 General Publication Methodology	Y	Y	N	?	Y	M	4, 8
20 Structured System Analysis & Design	Y	Y	N	N	Y	M, L	4
21 Pramis	Y	Y	Y	Y	Y	M, L	4
22 Offshore Development	Y	Y	Y	Y	Y	L	4
23 General Drug Development	N	Y	N	N	Y	L	4
24 Classic Building Construction	Y	?	Y	Y	Y	M, L	4

Table 1 Comparison of various methodologies from a project management perspective [9]

Comments: S = Scope, Q = Quality, T = Time, $ = Cost, P = Phases, Z = Project Size, C Comments [9]

1. Y, N, ?: Yes, No, Undetermined
2. S, M, L: Small, Medium or Large projects
3. Arguably an IT/software development methodology, i.e. belongs under Technology Management
4. High management ceremony
5. Low management ceremony
6. Classic "waterfall" sequence
7. Not suited to virtual teams
8. For book and periodical publishing [9]

Charvat observes: "Some project methodologies focus purely on the technology itself, while others focus more on a generic project management approach. You must carefully consider the methodology to use based on the organizational requirements."

2.5 Methodology Structures

A methodology by definition by Charvat is "*Methodology is a set of guidelines or principles that can be tailored and applied to a specific situation. In a project environment, it can be a list of things to do. This could be a specific approach, templates, forms, and even checklists used over the project life cycle.*"[9]

Through the project life cycle, many clarifying activities or tasks must be done to arrive to the end point. To manage such activities, a list of guidelines should be followed, and a set of forms should be filled. These activities, guidelines and forms are defined as a methodology in a project environment.

According to Murch[3], most methodologies have four different components:

1. **Guidelines**: In order to get a successful application development, necessary specific steps should be followed, these steps are the Guidelines, and they contain advices and recommendations of how to control the development process.
2. **Techniques**: The detailed process descriptions that support the activities throughout the entire software development life cycle (SDLC). Techniques provide assistance for completing the deliveries.
3. **Tools:** The methodology which depends on past project experiences is consolidated with the project management tools. Most methodologies do not necessarily follow of the primary application development software, they are mostly independent. This means that this software can be used with any language, from legacy COBOL systems that are 30 years old to fourth-generation languages (4GLs), CASE tools, to Object-Oriented systems.
4. **Templates**: Reusable documents, checklists, and forms that give the user assistance and advice.

2.6 Why Use a Methodology?

For the application development process, using a standard approach or a methodology creates major benefits and significant productivity gains. Project management benefits include the following:

- Both management and users know in advance what they can expect from each project. Predefined sign-off points, which are sometimes called Milestones, provide management and users with the ability to give their approval and to ensure that the project's goals are met.
- Results are of high quality .Verification and quality requirements and are integral parts of any good methodology. Quality assurance reviews or audits give management an independent assessment of the caliber of work done.
- Surprises or any unexpected events, such as cost overruns, scope changes, late implementation and other risks, can be minimized. Methodologies have risk assessment and control procedures to mitigate project risk.
- Increasing the productivity .To make the Operation, a group of guidelines must be followed, there is no "figuring it out or making it up as you go".
- A methodology gives standards that everyone can follow, which means improving the communication between the audiences. [9 Ibid, p140-142]

2.7 Meta-methodology

As a definition, Meta-methodology is a system designed in order to develop and test a methodology for a specific, definable purpose and as well to provide the development of the research into methodologies [10].

According to James [11], there are seven steps of Meta-methodology that are:

1. State the purpose of the proposed methodology
2. Test the purpose by criteria such as its desirability, practicability, uniqueness, and operationability.
3. Analyze the implications of the purpose
4. Operationalize the purpose
5. Design procedures
6. Test the procedures
7. Revise the purpose and/or procedures if necessary.

To produce the best possible methodology for a definable purpose, those steps should achieve three necessary things:

1. The determination of the purpose
2. The development of the steps that makes up the methodology
3. The testing of the methodology to see that it accomplishes the purpose.

The complete methodology of Meta-methodology is shown in Figure 2.

In the reference article [10], there is an appendix with more details of how to do those steps and other alternatives to accomplish steps.
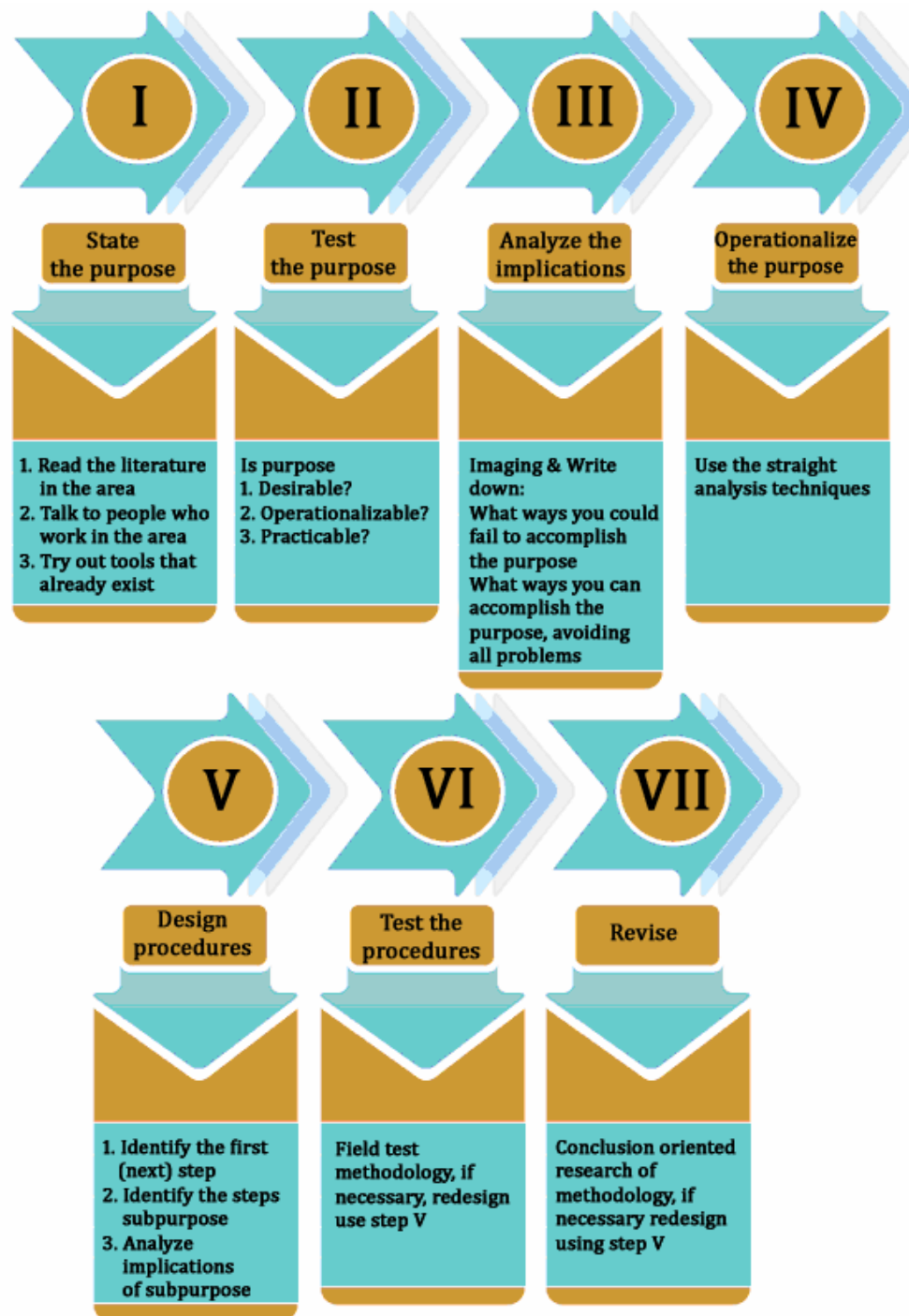
Figure 2 Methodology of Meta-methodology (illustration designed by author)

2.8 Software engineering

In section 2.4, the author present different methods are used in software project management and development.

According to Sommerville, *"Software engineering is an engineeling discipline that is concerned with all aspects of software production from the eady stages of system specification to maintaining the system after it has gone into use."* [14]

For developing a web based systems, a less formal development is particularly appropriate, which requires a blend of graphical design and software skills. Other point, the validation and testing of web based system not required that effort is spend in software production.

Web Development Company may be more concerned with customer-facing processes.

Development of a web site is not an event. It is process. Therefore the Z-Methodology designed in process model framework, which covers the fundamental process activities.

2.9 Web engineering

As a definition, the web engineering deals with establishment and use of sound scientific, engineering and management principles, disciplined and systematic approaches to the successful development, deployment and maintenance of high quality web based system and applications. [18]

The comparison between software engineering and web engineering in some principle are clear. The author mentioned here some of these differences to show the reader why the requirement for new methodology specialized for website development.

According to PayScale, The salary of software developer is 31$ per hour, while the cost for web developing and designing cost around 23$ per hour[1]. Also the required team for software development is triple size of developing website.

The author worked as software developer in C++ and Delphi (Visual Pascal) for more than 4 years, and the minimum time to produce medium size of such software was around 4 months. While when he worked as a web developer for last 5 years, the time required to produce a medium size of website was not more than 1 month. This point is different based on the experience.

---

[1] http://www.payscale.com, 2010-07-24

The user requirements should be specific and complete before starting developing software, while the website development can start with initial user requirements.

As well, the changes in software are growing slowly, while websites changes daily or weekly sometimes.

Finally, web developer don't devoted that much efforts in creating compatible website for different hardware or software, while the software developer should know the hardware and software environment before starting developing the software.

Theses differences between software and web engineering are listed in Table 2 [19].

	Software Engineering	**Web Engineering**
Objective	Create a quality product at minimum cost	Create a usable product as quickly as possible
User requirements	Specific	Changes fast
Growth & change	Slow	Fast
Hardware & software environment constrains	Specific	Unknown (should cater for all possible combinations)
Project size	Medium to large (10 to 100 people)	Generally small (3-9 people)
Length	12 to 18 months	3 to 9 month
Product	Code-based, low level of reuse, complex applications	High level of reuse, standard components, many standard applications

Table 2 Software Engineering vs. Web Engineering

2.10 RUP

"The RUP as a customizable project is the abbreviation of Rational Unified Process in software development.

The result of RUP is always come up with several out-of-the-box examples, and in the literature is posit as a complete software development.

The way of driving process in RUP is more different with the driven process with lightweight, which usually address the needs of small projects to more complex heavyweight projects. Nowadays all project with RUP are successfully operate and the point is no matter what the size of project is." [9]

2.11 PRINCE

Several scholars believe in PRINCE2 as a short form of control environments project (second version), and is now the United Kingdom's de facto standard for IT project management.

Prince nowadays is so popular methodology and is developed in the Central Computing and Telecommunications Agency (CCTA), and now it forms part of the office of Government Commerce. The (OCG) is the government agency for developing and implementing of OT projects. [9]

2.12 Waterfall

Another model, which is developed in 1970 with the struggle of Dr. Winston Royce is called waterfall model. The goal of this model is for developing the software, waterfall model has passes so many changed and revision and now it worked well, actually due to Dr. Barry Boehm struggle around 1974 to 1976, water fall model has changed in to other projects phases for the aim of better reflect current development best practices. Presently this model is one of the most widely n the area of software development. [9]

2.13 Unicycle

The classic methodology, which is successfully used, called unicycle model. The point in this model is the project phases are to much closer than other model and methods and they are join in the center, which has better influence in project communication. [9]

3 Methods

This thesis is conducted in mixed method research. "*Mixed research is research in which quantitative and qualitative techniques are mixed in a single study*"[2]. Partly, an exploratory research is used in early stage of clarifying and defining the nature of problem, and discovering new ideas. "*Exploratory research is a type of research conducted for a problem that has not been clearly defined. Exploratory research helps determine the best research design, data collection method and selection of subjects.*"[3]

Secondary data is collected for the purpose from different trusted resources (Books, Publications), and mainly primary data is collected through a questionnaire that is designed by the author. In section 4.2, the author discusses how the questionnaire is designed, and what the objectives of this questionnaire are.

Moreover, the developing of Z-Methodology is conducted in Meta-methodology. The Meta-Methodology is a system that is designed to develop and test a methodology for a specific and definable purpose, and as such, to provide the development, and the research into methodologies. These steps are described in details in section 4.1. [10]

The main activities followed during the thesis:

1. Identify the problems and the objectives of the thesis (Chapter 1)
2. Collect information from books, articles and other sources (Chapter 2)
3. Select the most related materials to the topic (Chapter 2)
4. Conduct questionnaire survey (Chapter 4, section 4.2)
5. Develop and Design Z-Methodology (Chapter 4, section 4.1)
6. Revise / Re-design

---

[2] http://www.southalabama.edu/coe/bset/johnson/lectures/lec14.htm

[3] http://en.wikipedia.org/wiki/Exploratory_research

4 Analysis & Design

4.1 Developing & Design Z-Methodology

As mentioned before in section 3, the Meta-methodology is used to developing Z-Methodology.

1. State the purpose of the proposed methodology

To identify the problem in hand, the author read different literature in field, related to software, websites, and project management, and come up with the following propose:

Proposed methodology is built to solve the main problems or aspects not covered in software development methodologies. As mentioned before in section 2.9, the differences between software and website are a reason to develop new methodology for manages a website project. Furthermore, as mentioned before in section 2.4, the differences between project management and development management methodologies give an idea to develop a new methodology handle sides, business and technical aspects.

2. Test the purpose by criteria such as its desirability, practicability, uniqueness, and operationability.

This step are done by creating a survey sent to project managers specialized in web development companies. 80% of the project managers who's answered the survey were expected the new methodology will be appropriate to manage the website projects. Unfortunately, there was no chance to test the purpose in real environment like Web Development Company.

3. Analyze the implications of the purpose

This phase was obtained by write down the brainstorm. Nothing new more than concludes from the traditional methodologies how its work and what are the steps should follow. The author starts with the comparison done by Charvat in section 2.4, and find where could be the problems and what should be done to avoid these problems and write down the best solution.

4. Operationalize the purpose

Again in this phase, the author followed the comparison between different methodologies and come up with the idea to merge between Technology and Management methodologies arrive to one methodology.

5. Design procedures

Real work on design the new methodology is start in this phase. After collect different information and study the brainstorms, avoiding unnecessary points are not help the project and come up with new points could help the project. The author draws the initial design for this methodology and compare with traditional methodologies. In this phase, the main three phases of design identified, and start draw the sub phases for these main phases.

6. Test the procedures

This step is done theoretically.

7. Revise the purpose and/or procedures if necessary.

4.2 Data Collection

The data collection is one of the major tasks and much time is devoted to this part of work. In this thesis, the author made an interview with some of the audience who will use Z-Methodology and the Handbook later. So the data collection techniques used was questionnaire.

Many Web sites and many books provide reliable data to support this thesis, but it was important to look for the data that is derived from the experience of qualified people in this field, primarily the project managers. Many successful project managers do not have a deep view of the Web Method in theory. As well as through the experience of the author, we found that many project managers work in one of the methods, but without any knowledge of the name of the method or its stages.

The problems and the objectives of the thesis were identified at the early stage of this thesis project start. Section 1.2 covers these problems and objectives. Secondly, along time devoted to collect information from books, articles and other sources. The relevant topics are selected and analyzed according to the predefined problems and objectives.

While reviewing the literature and starting writing the report, a questionnaire survey was conducted to know more about the project managers' background related to web project. Section 4.2 shows the reader the purpose of this questionnaire survey and the results.

The forms and checklists used in Z-Methodology were built based on different resources from well known companies who have long experiences in web development field. Also, the author selected the potential forms and checklist which are appropriate specific phase based on his knowledge.

4.2.1 *Questionnaire design*

According to [20], the questionnaire was designed. The questionnaire was intended to the project managers, who are responsible of managing web projects specially. The main objectives and purposes were listed, and with each objective, one or more questions are presented. Many questions for (BUSINESS QUESTIONNAIRE FORM) are from questionnaires available on the Internet. The source for these questions is available on http://www.pixelsavvy.com/files/project-questionnaire.doc . As well the source for (GUI SCREEN DESIGN CHECKLIST FORM) is available on http://adermall.com/node/269 .

4.2.2 *Questionnaire implementation*

As a consequence of the above mentioned questionnaire design, finally, the questionnaire is implemented under http://www.zaher.se/survey. Thereby, in order to make the questionnaire usable for as many people as possible.

To create the web pages, the author used ASP. All the answers given by the participants have been sent by email to the author. Before the Set of the survey online, the author and other three participants have tested the site.

4.2.3 *Questionnaire results*

The following table shows the main objectives and results were obtained from the questionnaire.

Objectives and purpose
- Get an information about the project managers background and experience in general   - Get information how the project managers managing the web projects   - To know the problems faced by them in using or not using formal methodologies   - Get information about using of project management & Technology Development Management methodologies by the project managers and team   - Get information if the new methodology (Z-Methodology) is required as the author expected
Results
4 of 10 project managers who answered this questionnaire have 10 years experience in the field, while the rest have between 1-5 years experience   - Consensus, formal method is used to manage web projects, but not one of traditional methodologies   3 of 10 are based on their experiences to support their formal method, while 2 are based on Internet web sites, and the rest using books and other things support their methodology   - The most frequent problems faced the project managers during project planning phase are the time schedule and getting the right requirements from the customer, while the most problem occurred during project executing was the communication with the customer   1 of 10 project managers uses Rational Unified Process as a project management methodology in his work, while the rest don't use any one   - The team was not following this method   - The customer was informed on how project process goes monthly, which mean a long time between different phases waiting customer acceptance on different requirements   8 of 10 project managers expect that this method (Z-Methodology) will help the project managers to manage their work, while 2 do not.

Table 3 Questionnaire Objectives & Results

4.3 Analysis of literature

This section is the linkage between the results of this thesis project and the literature reviews and the results.

The criteria to merge between these different methodologies are based on select the main advantages for them and find a solution to avoid the disadvantages of these methodologies.

4.3.1 *Project management methodologies*

According to Charvat, RUP & PRINCE2 methodologies are still used in many companies these days to manage a non-technical tasks or activities during project life cycle. As well, Waterfall model, and Unicycle methodologies are followed in software companies to manage such projects. Therefore, the author intends to develop the new methodology based on these methodologies.

One of the main advantages of using RUP methodology is that it is well documented, and available to be used easily. But on the other side, the process is complex, not traceable, and too difficult to apply or learn. Therefore, this methodology in useless if you don't have an expert who has the ability to go on the process [12].

In the early stage in PRINCE2 methodology, the project team is agreeing whether there is sufficient justification to proceed with the project or not. On other hand, each person who's involved in this project should be quite familiar with every aspect of PRINCE2 to know how to play the game [13].

The new methodology is merging these two methodologies in one phase called (Business Activities), by looking for the positive and negative sides of them. The author concludes, the RUP methodology is traceable methodology with some complexity, could be avoided if we involved the team in at the early stages. By this way, each person of the team will know what he has to do in certain phase and in certain activity. A number of documents will be divided among the team based on their roles.

4.3.2 *Technology development management methodologies*

The third phase is (Technical Activities) which is merging Waterfall and Unicycle methodologies. These two methodologies are categorizing as technology development management methodologies, and they focus purely on technical activities in the project.

The usage of waterfall model is very famous in many companies' nowadays for many reasons,

- ✓ Waterfall methodology is highly structured approach

   ✓   Ability to coordinate larger teams, even if geographically distributed
   ✓   Cost and Time control very well.

But one of the main disadvantages which could change the project managers mind to go forward in this process is the requirements should be available completely in advanced, to be able to go forward to the next steps [14]. This means that the whole project will be failed in case if new requirements are required at the end of project. From the authors view points, some requirements could be shifted to maintenance stage, in this way the project will be finished on time and within cost.

Unicycle methodology is a formal and high structured method, and simple to trace, but unfortunately it is not popular as other methods [9]. The phases of this methodology are divided between business and technical activities, which makes the methodology easy and traceable. The author observes the customer is almost involved in each phase, but moving from phase to phase is not waiting the customer's acceptance. Also from the methodology's name, the project manager is the decision maker in different phases, which means responsibility during the whole project life cycle. In another word, the project manager should devote his effort in one project to be able to control it.

5 Results

Z-Methodology is a process model designed according to the previous results from questionnaire survey, and the literature review in first hand.

As mentioned before Charvat observes: "*Some project methodologies focus purely on the technology itself, while others focus more on a generic project management approach. You must carefully consider the methodology to be used based on the organizational requirements.*" This observation gives the overall design for Z-Methodology. Z-Methodology is divided into 3 main phases:

Phase one: Business Activities, which focus on project management activities. Figure 3 shows the reader this phase in full details.
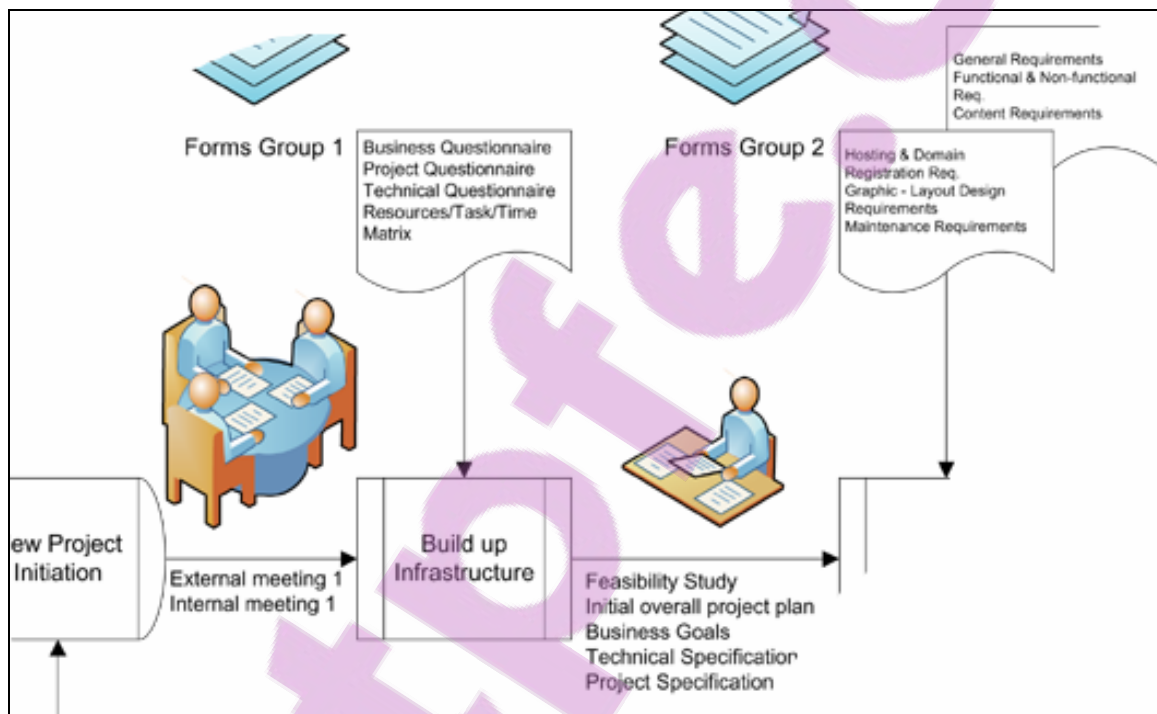
Figure 3 Phase one: Business Activities

Phase two: The Bridge, which links phase one and phase three. Figure 4 shows the reader this phase in full details.
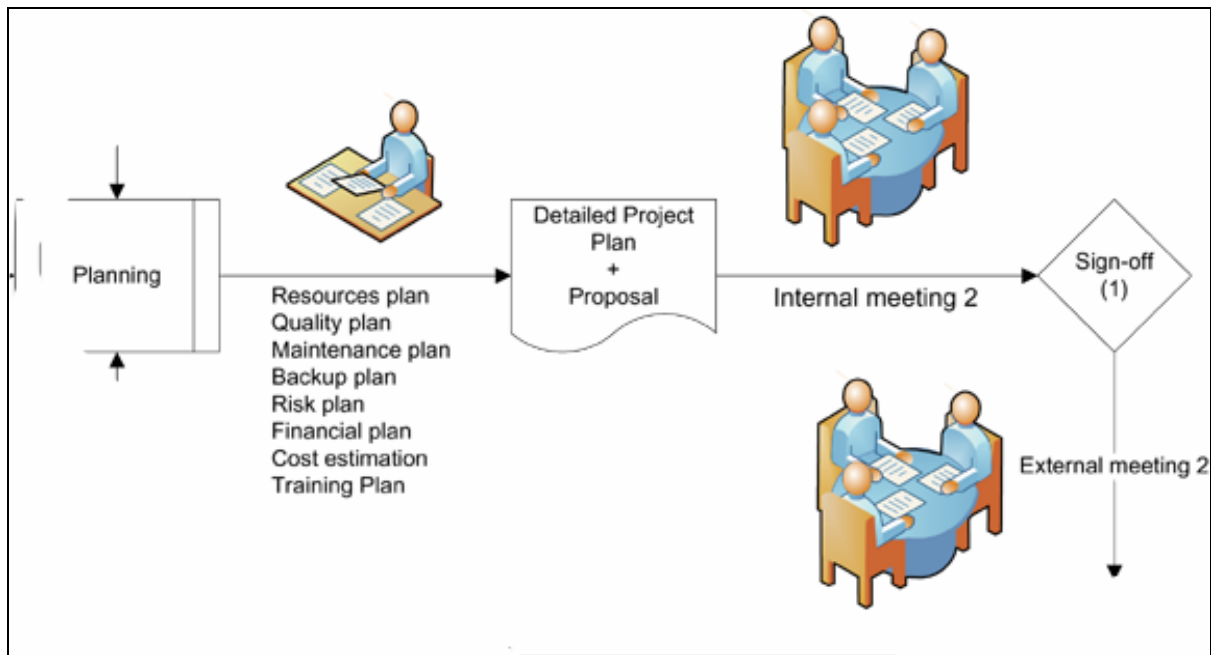
Figure 4 Phase two: The Bridge

Phase three: Technical Activities, which focus on technical activities. Figure 5 shows the reader this phase in full details.
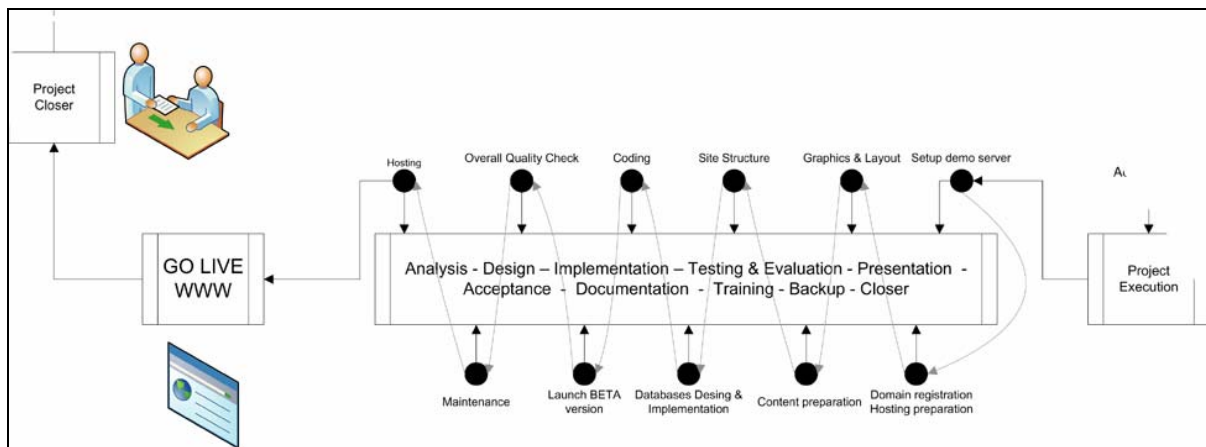
Figure 5 Phase three: Technical Activities

Like waterfall model, the output of each phase should be approved by the customer before shift to next phase [14]. In this way, an unnecessary iterations are avoid, which mean avoiding extra cost in development phases.

The following parts will describe the Z-Methodology phases. The author shows why is the need of this method, how does it work and who is involved in each

phase. This part is the handbook for using Z-Methodology. The full design of Z-Methodology in the Appendix section (Chapter 8).

5.1 Z-Methodology

The main five phases in traditional project management & technology development methodologies are: initiating, planning, executing, controlling, and finally closing. [15]

In Z-Methodology, the Business Activities Phase is corresponding to initiate the phase in the traditional methodologies. As well, The Bridge phase is corresponding to plan the phase, which is the most important phase before executing the project. The other three phases in traditional methodologies are merging together to correspond to phase three in the new methodology. In addition, review section 4.3.1 to know how the merge is done between different methodologies (Waterfall, PRINCE2, and RUP).

5.1.1 *Z-Methodology (Phase One – Business Activities)*

In first phase, the development company devoted all effort to handle the business activities before starting in planning or execution phases. If this phase (Business Activities) is handled in a right way and if it got the customer acceptance, the true work starts [16]. That does not mean the business activities are not a part of work, but the cost and effort devoted in this phase, are not too much as in next phases.

The Business Activities phase constructs in many steps shown in Figure 3.

As a first step at this phase, the project manager should initiate a new project by determining the scope, objectives, and deliverables to be produced, based on a RFP from a customer. We assume, the development company has enough staff to start this phase.

After receiving the RFP, the project manager should go through this RFP, and decide if there are any ambiguous points or requirements should be explained in a clear way. The project manager could need to meet the customer to clarify those points.

As a next step, the project manager will make an internal meeting with his/her staff to analyze the RFP in details, and decide if the team accepts this project or not. The analysis of this RFP will fill up many forms and checklists to help the team in next phases to follow their work and produce the deliverables on time, within budget, and with high quality.

The following forms and checklists are recommended to be used in analyzing the RFP:

- ✓ Hosting & Domain Registration Req.
- ✓ Graphic - Layout Design Requirements
- ✓ Maintenance Requirements
- ✓ Business Questionnaire
- ✓ Project Questionnaire
- ✓ Technical Questionnaire
- ✓ Resources/Task/Time Matrix
- ✓ General Requirements
- ✓ Functional & Non-functional Req.
- ✓ Content Requirements

If the team could not accept this project, the development company should send an excuse message to the customer, and it's better if the project manager could visit the company and explain the reasons why they don't accept this project. [19]

In this case, the project manager should document this project, with explaining the reasons exactly just to reject it.

In case the team accepted the project, the project manager uses the same forms to produce the proposal to send it to the customer. The proposal should cover all requirements from the RFP.

When the customer receives the proposal, the project manager should keep an opened channel with the customer to be sure if he does not accept the initial proposal, what the development company should change in the proposal to get the acceptance of the customer.

The output of this phase is: activities should be distributed between the team to accomplish the work on time, within cost, and with high quality that satisfies the development company before the customer.

This phase is iteration in many steps. With each loop, a new feedback from the customer and the team should analyze and take in account.

When the customer accepts the proposal, the development company repairs a contract between them and the customer, when it signed from both sides, this phase is then finished and closed.

 The author doesn't include any proposal or contract sample in the Handbook, because each company could have special format. As well, not all recommended forms are attached for the same reason.
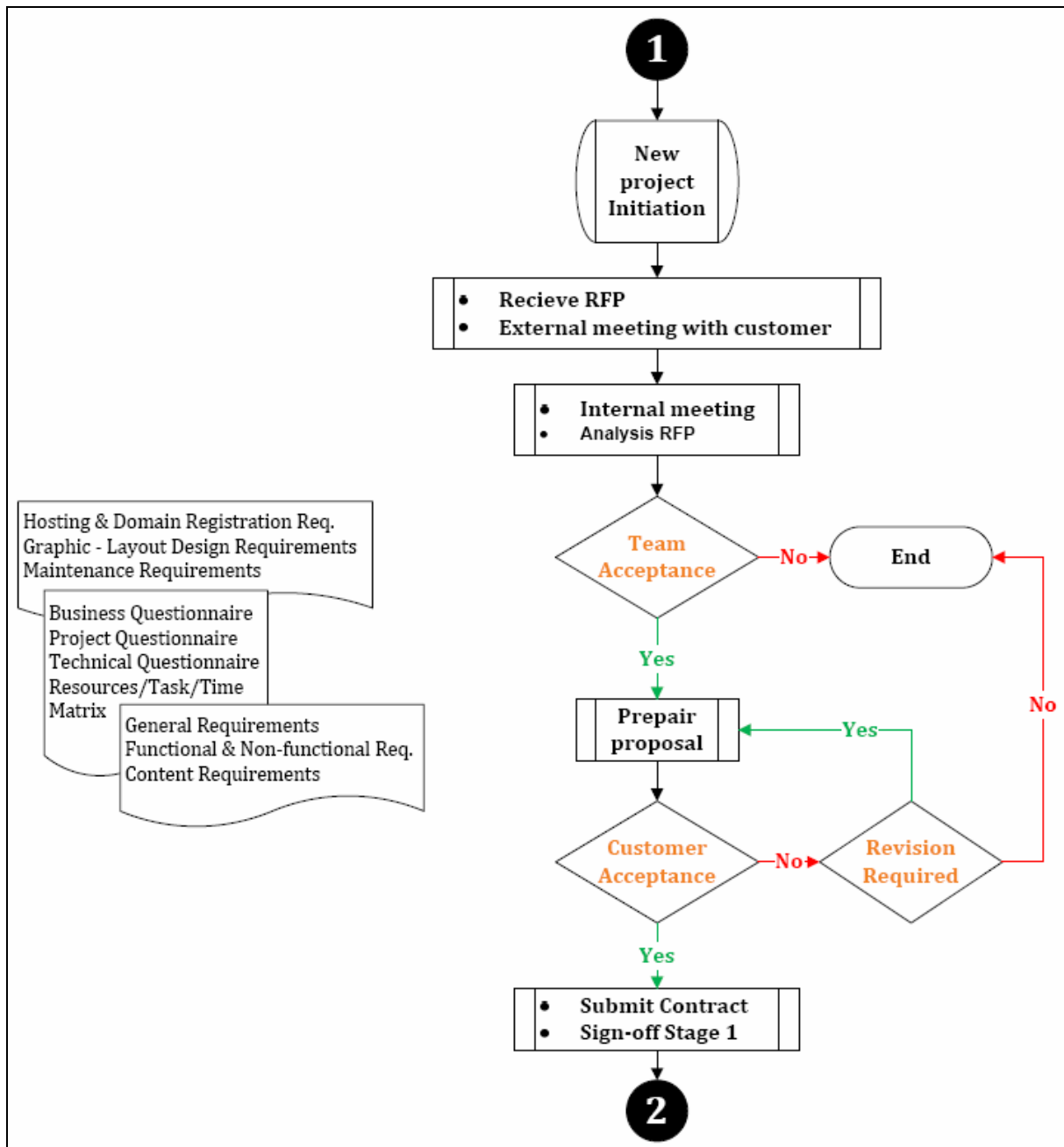
Figure 6 Business Activities (simple illustration)

5.1.2 *Z-Methodology (Phase Two – The Bridge)*

The third phase in Z-Methodology is concerned in technical activities, while the first phase was concerned in business activities. Phase two (The Bridge) is the linkage between those phases to fill the gap. As mentioned before in section 2.4, "Some project methodologies focus purely on the technology itself, while others focus more on a generic project management approach.", so the gap here is how to link those two phases with each other.

In phase one, the team is the decision maker who decides if they can accept and handle the project or not. The technical persons are involved early in the project, where in traditional methodologies; the managers are starting up the project. This is one of the mistakes of project management. The technical persons will give them the estimation based exactly on their skills, while the project manager alone will give estimations based on his knowledge about his team, in this way, the estimations will be precise. [17]

In phase two, all the forms and checklists which are generated from phase one will be used in this phase to produce the plans and distribute the work among the team. Resources/Task/Time Matrix form is the most important form that gives the project manager the right information to create these plans.

The following plans should be ready before starting any technical activities to avoid the conflicts, which could delay the project in advanced time:

- ✓ Resources plan
- ✓ Quality check plan
- ✓ Maintenance plan
- ✓ Backup plan
- ✓ Risk plan
- ✓ Financial plan
- ✓ Training Plan

Those plans will help the project manager to distribute the work.

The customer again will be involved in this phase to give his acceptance on each plan.

5.1.3 Z-Methodology (Phase Three – Technical Activities)

The technical activities in web projects have almost the same procedures.

What are these activities?

The following activities or tasks are done during this phase:

1. Setup demo server
2. Site structure
3. Database design & implementation
4. Coding
5. Code validation
6. Graphics & layout design
7. Content preparation
8. Overall Quality check
9. Setup real hosting server
10. Domain name registration
11. Maintenance
12. Launch Beta version
13. GO LIVE WWW

These activities could have another order, merged or divided in sub activities based on priority, team size, and time. Be sure to order the activities based on dependability as a main factor.

According to Sommerville [14] as the software process have generic activities such as specification, development; validation, and evaluation, the technical process in Z-Methodology have same activities.

The output forms and check lists from phase one and according to the plans from Bridge phase, the team can start this phase. Each person will know his role in a specific activity, and how long time this activity will take to be accomplished. Some persons will have role in different activities; in this case the project manager with the person should decide the priority.

The process in this phase as shown in Figure 4 starting from an order by the project manager or team leader to accomplish an activity. The technical person should be sure he has all requirements before accepting the work. And according to the output forms and checklists from previous phase, the person who's involved in this activity will follow it until closing this activity.

The output of one activity will be a part of the final web site. To avoid huge process in quality check, the author recommends checking each part separately. In this case, the outputs of each activity are checked before sending to the final

stage. Quality check plan should be followed in order to generate a quality check report for this activity.

When an activity is accomplished and a customer accepts the results after quality check, the activity should document in details (specifications, inputs, outputs, plan was followed, and which forms or checklists are used from previous phase).

Some activities have to train a person from customer side. And the person, who will be under training, should fill an acceptance for this activity. When this is done, the person has to inform the project manager or team leader to close this activity.

When all of required activities are done (pass the quality check, documented, training (if required), backup (if required)), the technical activities cycle will be closed, and the final product will be available to be published on the internet or intranet (GO LIVE).
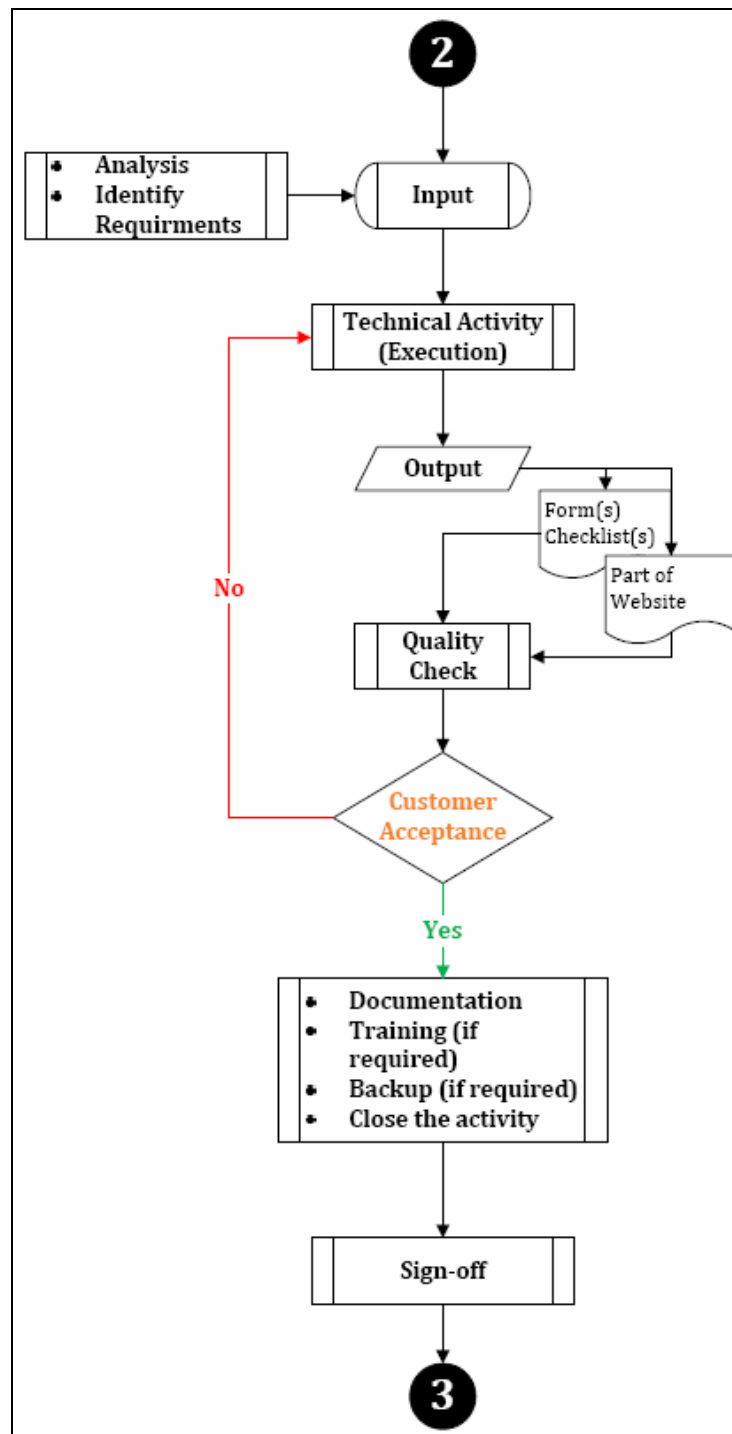
Figure 7 Technical Activities (simple illustration)

6 Conclusion and discussion

The main purpose of Z-Methodology was to fill the gaps between the business and technical activities during the project executing. Also to give the audiences more than one methodology to follow could drive them to follow not it at all.

The web projects are new compared to the appearance of traditional methodologies. Therefore, the ability to specialize such methodologies to meet the requirements is needed.

The customer is the most important part in web projects. If the customer requirements are clear and specific, the course of the project will be easy.

Z-Methodology focuses in balance between technical and non-technical activities by merging different methodologies and specialized for web projects, and involving the audiences in many steps to avoid the most common problems. The first phase on Z-Methodology focused on understanding the customer requirements early before starting planning. In this way, the unexpected potential problems or risks might occur, will have great chance to be avoided.

In future, if Z-Methodology would be converted into a web application, that will make it much better tool to be followed by development companies. But again, the question is "Which methodology should be followed to convert Z-Methodology into a web project?"

7 References

[1] Managing Web Projects: J. Rodney Turner, Gower Publishing, Gower House, ISBN 0-566-08567-4

[2] IT Project Failures, Michael Krigsman, http://blogs.zdnet.com/projectfailures/?p=665

[3] Project Management Best Practices For IT Professionals, Richard Murch, Prentice-Hall, Inc. 2001

[4] Wikipedia, the free encyclopedia, http://en.wikipedia.org/wiki/Handbook, (2010-06-01)

[5] Software Project Management, http://www.softwareprojects.org/project_intake_reasons22.htm, (2010-06-01)

[6] Global project management handbook, David I. Cleland, Roland Gareis, McGraw-Hill Professional, 2006. ISBN 0071460454

[7] e-Project Management for the New Reality, Kulik, Peter, and Robert Samuelsen, Project Management Institute: PM Network Online, 2001.

[8] Web Project Management: Delivering Successful Commercial Web Sites, Ashley Friedlein, Morgan Kaufmann; 1st edition, ISBN-13: 978-1558606784

[9] Project Management Methodologies: Selecting, Implementing, and Supporting Methodologies and Processes for Projects, Jason Charvat, Wiley (February 7, 2003)

[10]   Meta-Methodology: An Overview of What It Is and How It Was Developed, James Thomann, Feb 1973

[11]   The practice of Social Research, Babbie, E, Chapter 6

[12]   Rational Unified Process, The: An Introduction, Philippe Kruchten, Addison-Wesley Professional, December 10, 2003

[13]   Managing Successful Projects with PRINCE2, reat Britain, Stationery Office; 978-0113309467

[14]   Software Engineering, 7th edn., Sommerville, I., Pearson Eductation Ltd., London (2004)

[15]   Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Harold Kerzner, Wiley

[16]   Introduction to Project Management, Course Technology, Kathy Schwalbe, 2 edition (January 15, 2008)

[17]   Cost Estimation Techniques for Web Projects, Emilia Mendes, IGI Publishing; illustrated edition, ISBN-13: 978-1599041353

[18]   Web Engineering: An Introduction,Athula Ginige and San Murugesan, IEEE Multimedia, Vol. 8, No. 1, January 2001, pp 14-18

[19]   Web Engineering as a Specialization of Software Engineering: Differences in Project Management Education, Department of Software Engineering, Upper Austria University of Applied Sciences

[20]   The practice of Social Research, Babbie, E, Chapter 6

8 Appendices

- Z-Methodology Design
- Questionnaire survey
- Business questionnaire form
- Technical specification form
- Internal meeting form
- External meeting form
- GUI screen design checklist form
- Quality check – checklist form
- Resources/Tasks matrix form

Forms Group 1

Business Questionnaire
Project Questionnaire
Technical Questionnaire
Resources/Task/Time
Matrix

Forms Group 2

Hosting & Domain
Registration Req.
Graphic - Layout Design
Requirements
Maintenance Requirements

General Requirements
Functional & Non-functional
Req.
Content Requirements

New Project
Initiation

External meeting 1
Internal meeting 1

Build up
Proposal

Feasibility Study
Initial overall project plan
Business Goals
Technical Specification
Project Specification

Planning

Resources plan
Quality plan
Maintenance plan
Backup plan
Risk plan
Financial plan
Cost estimation
Training Plan
Web solution

Detailed Project
Plan
+
Proposal

Internal meeting 2

Sign-off
(1)

External meeting 2

Revision required

Sign-off
(2)

Project
Closure

Project Rejected

Acceptance

Hosting   Overall Quality Check   Coding   Site Structure   Graphics & Layout   Setup demo server

GO LIVE
WWW

Analysis - Design – Implementation – Testing & Evaluation - Presentation -
Acceptance - Documentation - Training - Backup - Closer

Project
Execution

Maintenance   Launch BETA   Databases Desing &   Content preparation   Domain registration
                version   Implementation   Hosting preparation

BESTPFE.COM
List of research project topics and materials

Z-Methodology Design

Questionnaire Survey

Current Position	
Education Level	
Number of years of Experience	
How many web projects were planned and executed under your management?	

Are using formal method to managing projects?	○ Yes ○ No
If Yes, What are the resources support this method?	□ Experience □ Internet Web Site □ Books □ Other
What most of the problems that appear during project planning?	
What most of the problems that appear during project executing?	

Have you used one of the following Project Management Methodologies?	○ Rational Unified Process ○ PRINCE2 ○ System Development Life Cycle (SDLC) ○ Solution-based Project Methodology ○ TenStep ○ None
If you are used one of them, Does your team follow the method at this time?	○ Yes ○ No
If you used one of them, This method is suited to control the …	□ Scope □ Quality □ Time □ Cost
If you used one of them, This method is not suited to control of …	□ Scope □ Quality □ Time □ Cost
Did any Handbook, Forms, or Checklists support this method?	○ Yes ○ No
Are these things (Forms, Checklists, or Handbook) support and help you as you expected?	○ Yes ○ No
Was the customer informed on how the process goes to implementing the project?	○ Daily ○ Weekly ○ Every 2 weeks ○ Monthly

Have you used one of the following Technology Development Management Methodologies?	○ Extreme Programming (XP) ○ UniCycle ○ Watefall ○ Spiral ○ Rapid Applications Development (RAD) ○ None
If you used one of them, Does your team follow the method at this time?	○ Yes ○ No
If you used one of them, This method is suited to control the …	□ Scope □ Quality □ Time □ Cost
If you used one of them, This method is not suited to control of …	□ Scope □ Quality □ Time □ Cost
Did any Handbook, Forms, or Checklists support this method?	○ Yes ○ No
Are these things (Forms, Checklists, or Handbook) support and help you as you expected?	○ Yes ○ No
Was the customer informed of how does the process go to implement the project?	○ Daily ○ Weekly ○ Every 2 weeks ○ Monthly

I'm developing a new methodology that mixes the Project Management Methodologies with the Management Development Technology Methodologies, further; it's specialized in managing the Web Project. This method is supported with a Handbook which contains different forms and checklist, and a recommendation for the team.	
Have you expected that it will be effective at the required form?	○ Yes ○ No
* Would you like to participate in developing this method?	○ Yes ○ No

BUSINESS QUESTIONNAIRE FORM

Form #:……………………………………………… Project #:………………………………………………

Project name : ……

When to use : ……

Issued Date : ………………………………………… Issued By : …………………………………………

Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team   ☐ Quality Checker

☐ Customer   ☐ Other ……………………………………………

1. What is the nature of your business?

……
……

2. How old is your company?

……

3. What can we do for you? (I.e. consult, develop a site, or upgrade a site)

……
……

4. What goals do you have for this project?

……
……

5. What do you specifically hope to accomplish? (I.e. how will you judge the success of this project)?

……
……

6. How do you envision the project supporting your organization missions and objectives?

……
……

7. What is your target audience/market?

……
……

8. Does your company have an existing website(s)?   Yes ☐   No ☐

9. If yes, will this project change it or create a new one?

Change ☐   Create ☐

10. If the answer is, "it will change it", why do you want to change it?

……
……

11. Have you or has your company done a project like this before?

Yes ☐   No ☐

12. What your company's three most pressing problems it is trying to solve now?

……
……
……
……

13. Who are your competitors?

14. What are their competitive strategies?

15. Do they have a Website?

16. If yes, what are your comments about it?

17. How many proposals are under consideration at this time?

18. What is your budget for this project?

19. When is the final produced project due?

20. Are there any events tied to the project launch (i.e. product release, tour, media event, etc.)?

21. Who is managing the project from your end?

22. Who is/are the final decision maker(s)?

23. Who is responsible for deliverables?

24. Who is responsible for signing off on the deliverables of this project?

25. Who approves the payments?

26. Will there be unrestricted access to decision-makers for fast turnaround on sign off junctures?

27. How many days do you require for sign off?

28. Who is responsible for design (look and feel of the project)?

29. Who is responsible for database/programming?

30. Who is responsible for content?

TECHNICAL SPECIFICATIONS FORM

Form #:.. Project #:..

Project name : ....

When to use : ....

Issued Date : .... Issued By : ....

Copy to:

☐ Project Manager ☐ Web Developer

☐ System Analyst ☐ CMS Developer

☐ System Administrator ☐ Web Master

☐ Database Administrator ☐ Graphic Designer

☐ Application Developer ☐ Multimedia Designer / Developer

☐ Network Administrator ☐ Content Writer

☐ Help Desk / Support Team ☐ Quality Checker

☐ Customer ☐ Other ....

Features and Functionality

What features or functions could be used on the website?

☐ Content management

☐ e-commerce

☐ Demonstrations

☐ Build contact list

☐ File management

☐ Search

☐ Help files

☐ Other

....

....

....

Graphic Design

Do you have branding materials that we can use? Examples are: Logo, Business Card, Brochure, Print Ad, etc.

☐ EPS

☐ Adobe Illustrator

☐ Adobe Photoshop

☐ PDF

☐ TIF

☐ JPEG

☐ Bitmap

☐ Other

....

....

....

TECHNICAL SPECIFICATIONS FORM

Database/Programming

Does the administrative back-end area of the site require some design to enhance usability?

....
....
....

If you currently have a website does it use a database? Which type of database does it use? SQL, Access and version number of the software.

....
....
....

Approximately how many users will require the use of the database on a daily basis? What Level of technical skill will they have?

....
....
....

Will you need assistance in populating the dynamic areas of the site with content (content input and/ or editing)?

....
....

Will your database need to store customer information?

....

If there is more than one site, find out how much of the data between the two overlaps in order to recommend whether or not a shared backend will save money?

....
....
....

Will your website require features for site administration? What levels of access will the administrator require?

....
....
....
....
....

Is there an on-site website administrator (or webmaster)?

....

Is there a need for secure sections on your website where users would need a password to get access to?

....
....
....

Have you purchased a secure certificate? A secure certificate is an encryption level built in to your website's pages that prevent your site from being compromised.

....
....
....

TECHNICAL SPECIFICATIONS FORM

Content Development

Do you have existing content that could be used in this project?

....

What form is it in?

□ Digital art

□ Digital documents

□ Printed photos

□ Transparencies

□ Rendered art

□ Printed documents

□ Database

□ Other

....
....
....

Are the rights for all your content cleared? If not, is there a budget for clearance?

....

Will there be a requirement for administrator training?

....
....
....
....

Will you require hosting services for their website?

....
....
....
....

If you are not hosting your website with us, will you require our assistance in installing the website on your host server?

....
....
....
....

Will you require website maintenance and updates on a continuing basis?

....
....
....
....

INTERNAL MEETING FORM

Form #:………………………………………………… Project #:…………………………………………………………………………

Project name : ………

When to use : ……

Issued Date : …………………………………………… Issued By : …………………………………………………………………

Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team ☐ Quality Checker

☐ Customer   ☐ Other ……………………………………………

Place:
………

………

Time:
………

………

Persons attending:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Technical Writer

☐ Customer   ☐ Quality Checker

………

………

………

Persons NOT attending

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Technical Writer

☐ Customer   ☐ Quality Checker

………

………

………

INTERNAL MEETING FORM

Purpose of meeting:

....
....
....
....
....
....
....
....
....
....
....

Discussion:

....
....
....
....
....
....
....
....
....
....
....
....
....

Action / Next Steps:

Who	What	When	Comments

Next meeting date:

....

EXTERNAL MEETING FORM

Form #:………………………………………… Project #:……………………………………………………
Project name : ……
When to use : ……
Issued Date : ……………………………………… Issued By : …………………………………………………
Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team   ☐ Quality Checker

☐ Customer   ☐ Other …………………………………………

Place:
……
……

Time:
……
……

Persons attending:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Technical Writer

☐ Customer   ☐ Quality Checker

……
……
……

Persons NOT attending

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Technical Writer

☐ Customer   ☐ Quality Checker

……
……
……

EXTERNAL MEETING FORM

Purpose of meeting:

....
....
....
....
....
....
....
....
....
....
....

Discussion:

....
....
....
....
....
....
....
....
....
....
....
....

Action / Next Steps:

Who	What	When	Comments

Next meeting date:

....

GUI SCREEN DESIGN CHECKLIST FORM

Form #:…………………………………………… Project #:……………………………………………………………

Project name : ………

When to use : ………

Issued Date : ……………………………………………… Issued By : ………………………………………………

Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team   ☐ Quality Checker

☐ Customer   ☐ Other ……………………………………………

	Yes	No	N/A	Remarks
Window Components (including menus and screen titles)				
Is the correct window type used (e.g., primary window, dialog box, property sheet)?				
Are basic components (e.g., title bars, horizontal and vertical scroll bars) used consistently and according to established standards?				
Does the screen title identify the information in the current window or display the item name of the command button that invoked the window?				
Is a status bar used to display useful information about the current screen as well as context-sensitive help for the current menu bar item, tool bar item, or graphical object?				
Are menus (including pop-up and cascading) defined consistently and according to established standards (e.g., File menu first, Edit menu second, Help menu last)?				
Are related menu items grouped together and visually separated by lines?				

GUI SCREEN DESIGN CHECKLIST FORM

Are commonly used menu items placed at the top of the menu list?				
Is a tool bar used to allow the user an alternative method to access commonly used processes?				
Are tool bar items grouped according to the function they perform?				
Graphical Objects (including buttons and static text such as field and object labels)				
Is the static text clear, concise, and meaningful?				
Are all static text words spelled out (correctly!) and abbreviations used only when space is limited?				
Does static text follow the project standards for consistent placement on the screen (e.g., field labels to the left of an entry field)?				
Does static text identifying field entry end according to project standards (e.g., with a colon)?				
Is static text capitalized according to project standards?				
Does static text follow project standards for consistent terminology (e.g., Employee No., Employee Number, or Employee #)?				
Do buttons follow the project standards for size and position (e.g., Cancel button is correct size and below the OK button)?				
Are graphical objects used appropriately and according to the guidelines specified in Graphical User Interface Design? (Specific questions follow for various types of graphical objects.)				
Is a list view used to allow a collection of items that are on a single hierarchical level, such as files or folders, to be displayed and manipulated?				

Is a tree view used to allow a collection of items, such as files or folders, to be displayed and manipulated within varying hierarchical levels?				
Are pop-up menus provided as a way for the user to access information about an object's properties or perform specific tasks on the object?				
Are command buttons used to trigger application processes?				
Are single line edits used to input and display data when only one line is needed?				
Are multi-line edits used to input and display data when the data spans multiple lines?				
Are rich text boxes used if capabilities, such as printing, drag and drop, font selection or formatting (e.g., boldface, italics, or underlining) are required?				
Are checkboxes used to show independent on/off choices?				
Are radio buttons used to show sets of two or more mutually exclusive choices?				
Are list boxes used to allow the user to select one or more items from a list of dynamic, possible choices?				
Are options provided for all possible list box choices?				
Are drop down list boxes used to allow the user to select only one item from a list of possible choices?				
Are options provided for all possible drop down list box choices?				
Are drop down combo boxes (drop down list boxes combined with a single-line edit) used to allow the user to select one item from a list of possible choices or to enter a value not in the list?				

Are spin boxes used to allow the user to select one predefined alternative by scrolling or "spinning" through the choices (which have a customary or consecutive order)?				
Are sliders or trackbars used to allow the user to set a value in a continuous range (e.g., volume or brightness)?				
Are group boxes with appropriate titles used to indicate related objects (e.g., related checkboxes or radio buttons)?				
GUI Operation (including mouse and keyboard navigation, audible and visual feedback)				
Are keyboard commands provided for frequent users and those who prefer keyboard use over the mouse?				
Are unique mnemonic (accelerator) keys provided as a method for activating menu items and buttons, where appropriate, through the keyboard (e.g., Alt+F selects the File menu)?				
Are shortcut keys provided, where appropriate, as a method for activating controls on pulldown or cascading menus using the keyboard, without first having to select the menu (e.g., Ctrl+S saves the document)?				
Are standards followed for mouse and keyboard navigation, manipulation, and interaction (e.g., TAB, SHIFT+TAB, double-click, selection of elements and objects, drag and drop)?				
Is disabling used to indicate to the user when actions (including selection of specific menu items and use of objects such as checkboxes) are not valid, temporarily unavailable or do not pertain to the current state of the window?				
Is the cursor changed to indicate when the user tries to take inappropriate action (e.g., when the destination for a drag and drop action is invalid)?				

Is the cursor changed (e.g., to an hourglass) to notify the user of a short wait?				
Is a progress indicator provided during long tasks to show the entire duration of the operation and the current position in the operation's duration (e.g., performing a month-end close)?				
Is an animation control used to indicate system activity when the total duration of the operation is unknown (e.g., animation clips of a magnifying glass rotating over a document can be used to indicate that a Find operation is underway)?				
Is sound used sparingly but effectively (but not as the only means) to provide warning on potentially destructive actions and to signal completion of lengthy tasks?				
General Design Considerations				
Is on-line help provided for the screen and all its tasks?				
Does the screen avoid situations where users can make errors by providing only appropriate choices and making potentially dangerous actions reversible or recoverable?				
Are meaningful, concise messages provided when an error or problem exists?				
Do error messages include guidance as to what constitutes a correct entry (e.g., the employee number must be numeric)?				
Do error messages follow project standards for consistent terminology (e.g., use of employee no., employee number, or employee #)?				
Are colors used following the project standards for consistency and according to the guidelines specified in Graphical User Interface Design?				

GUI SCREEN DESIGN CHECKLIST FORM

Are fonts used following the project standards for consistency and according to the guidelines specified in Graphical User Interface Design?				
Does the screen follow project standards for perspective, shading, and showing three dimensions?				
Is the screen well organized and easy to use?				
Is the screen well composed?				
Are the fields and objects properly aligned?				
Is information arranged symmetrically with adequate spacing between components?				
Is related information grouped together?				
If it is necessary to provide multiple screens for one piece of logical data, is related information located together on one screen?				
Are the most important fields located where they are easy to see?				
Is information presented in the order that the user needs it?				
Does the information flow from field to field?				
If the screen is used to enter or display data that was filled in manually from a paper form, does the screen resemble the source document to assist the users in their task?				
Are optional and mandatory fields marked clearly on the screen?				
Are default values provided in fields, where appropriate?				
Are field sizes large enough to handle all valid entries?				

Are long strings of numerical data separated to decrease errors, for example, are phone numbers displayed and entered as (206) 555-1212 rather than 2065551212?				
Is additional information (e.g., the range of valid entries or instructions) provided on the screen to assist the user where appropriate?				
Do groups of fields follow the project standards for consistent positioning (e.g., the company ID, name, and telephone number are always in the screen's top right-hand corner)?				
International Considerations				
Is the screen designed to fit the requirements for international use?				
Is the text easy to translate (e.g., are slang, acronyms, and abbreviations avoided)?				
Is there enough space on the screen to fit expanded (30 percent or more) translated text?				
Are icons and images avoided that are specific to certain countries (e.g., a mailbox may look different in another country)?				

QUALITY CHECK - CHECKLIST FORM

Form #:………………………………………… Project #:………………………………………………………

Project name : ……………………………………………………………………………………………………

When to use : ……………………………………………………………………………………………………

Issued Date : ……………………………………… Issued By : …………………………………………

Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team   ☐ Quality Checker

☐ Customer   ☐ Other ………………………………………

ITEM	Yes	No	Comments
Quality of code			
Does the site use a correct Doctype?	☐	☐	
Does the site use a Character set?	☐	☐	
Does the site use Valid (X)HTML?	☐	☐	
Does the site use Valid CSS?	☐	☐	
Does the site use any CSS hacks?	☐	☐	
Does the site use unnecessary classes or ids?	☐	☐	
Is the code well structured?	☐	☐	
Does the site have any broken links?	☐	☐	
How does the site perform in terms of speed/page size?	☐	☐	
Does the site have JavaScript errors?	☐	☐	
Degree of separation between content and presentation			
Does the site use CSS for all presentation aspects (fonts, colors, padding, borders etc)?	☐	☐	
Are all decorative images in the CSS, or do they appear in the (X)HTML?	☐	☐	
Accessibility for users			
Are "alt", "title" attributes used for all descriptive images?	☐	☐	
Does the site use relative units rather than absolute units for text size?	☐	☐	
Do any aspects of the layout break if font size is increased?	☐	☐	
Does the site use accessible forms?	☐	☐	
Does the site use accessible tables?	☐	☐	
Is there sufficient color brightness/contrasts?	☐	☐	
Is color alone used for critical information?	☐	☐	
Is there delayed responsiveness for dropdown menus (for users with reduced motor skills)?	☐	☐	

QUALITY CHECK - CHECKLIST FORM

Accessibility for devices

Does the site work acceptably across modern and older browsers?	☐	☐	
Is the content accessible with CSS switched off or not supported?	☐	☐	
Is the content accessible with images switched off or not supported?	☐	☐	
Does the site work in text browsers such as Lynx?	☐	☐	
Does the site work well when printed?	☐	☐	
Does the site work well in Hand Held devices?	☐	☐	
Does the site include detailed metadata?	☐	☐	
Does the site work well in a range of browser window sizes?	☐	☐	

Basic Usability

Is there a clear visual hierarchy?	☐	☐	
Are heading levels easy to distinguish?	☐	☐	
Is the site's navigation easy to understand?	☐	☐	
Is the site's navigation consistent?	☐	☐	
Does the site use consistent and appropriate language?	☐	☐	
Does the site have a sitemap page and contact page? Are they easy to find?	☐	☐	
For large sites, is there a search tool?	☐	☐	
Is there a link to the home page on every page in the site?	☐	☐	
Are links underlined?	☐	☐	
Are visited links clearly defined?	☐	☐	

Site management

Does the site have a meaningful and helpful 404 error page that works from any depth in the site?	☐	☐	
Does the site use friendly URLs?	☐	☐	
Do your URLs work without "www"?	☐	☐	
Does the site have a favicon?	☐	☐	

RESOURCES/TASKS MATRIX FORM

Form #:……………………………………………………………   Project #:………………………………………………………………

Project name : ………

When to use : ………

Issued Date : …………………………………………………   Issued By : …………………………………………………………………

Copy to:

☐ Project Manager   ☐ Web Developer

☐ System Analyst   ☐ CMS Developer

☐ System Administrator   ☐ Web Master

☐ Database Administrator   ☐ Graphic Designer

☐ Application Developer   ☐ Multimedia Designer / Developer

☐ Network Administrator   ☐ Content Writer

☐ Help Desk / Support Team   ☐ Quality Checker

☐ Customer   ☐ Other ……………………………………………

Task/ Resource	Setup demo server (Task 1)	Domain / Hosting registration (Task 2)	Graphics design & Layout (Task 3)	Site structure (Task 4)	Content preparation (Task 5)	Coding (Task 6)	Database design & Implementation (Task 7)	Quality check (Task 8)	Project closer (Task 9)	TOTAL HOURS
Project Manager	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	
System Analyst	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	
System Administrator	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	T……hours Priority…… B-Task…… A-Task…… P-Task……	

Database Administrator	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Application Developer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Web Developer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
CMS Developer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Web Master	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Graphic Designer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Technical Writer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
Quality Checker	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	

RESOURCES/TASKS MATRIX FORM

Customer	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	T......hours Priority...... B-Task...... A-Task...... P-Task......	
TOTAL HOURS										

T......**hours** = Estimation time per hours   **Priority**...... = priority of this task
B-Task...... = Before Task number   **A-Task**...... = After Task number   **P-Task**...... = In-parallel with Task number

COMMENTS

....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....
....